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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,872	03/22/2004	John L. Caldwell	108298770US	9880

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EXAMINER	
HOLLINGTON, JERMELE M	
ART UNIT	**PAPER NUMBER**
2829	

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/805,872	CALDWELL ET AL.	
	Examiner	Art Unit	
	Jermele M. Hollington	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 17-37 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 17-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Hembree (6208156).

Regarding claims 17, 24 and 26, Hembree discloses [see Figs. 4A-4C] a test socket (test carrier 42) for receiving a microfeature device (shown but not numbered) having a substrate (semiconductor 44) and a plurality of interconnect elements (contact balls 10) projecting from the substrate (44), the test socket (42) comprising a recess (alignment opening 94) having a lead-in surface (alignment member 48) and a support surface (base 46), the support surface (46) including a plurality of apertures (combination of recesses 54 and conductive vias 78) positioned to receive corresponding interconnect elements (10) of the microfeature device (44 and 10), wherein the individual apertures (54 and 78) extend through the test socket (42) and have a cross-sectional dimension less than a cross-sectional dimension of the interconnect elements (10) so that the substrate (44) is spaced apart from the support surface (46) when the microfeature device (44 and 10) is received in the recess (94), wherein the test socket (42) further comprises

an exterior surface (force applying mechanism 50) opposite the support surface (46), and wherein the individual apertures (54 and 78) comprise a first beveled portion proximate to the support surface (46) and a second beveled portion proximate to the exterior surface (50).

Regarding claim 18, Hembree discloses the apertures (54 and 78) in the support surface (46) are arranged in rows and columns corresponding to an array of interconnect elements (10) on the microfeature device (44 and 10).

Regarding claims 19 and 30, Hembree discloses the support surface (46) further comprises an opening (shown but not numbered); and the apertures (54 and 78) in the support surface (46) are arranged around the perimeter of the opening so that when the microfeature device (44 and 10) is received in the recess (94), the apertures (54 and 78) receive the corresponding interconnect elements (10) and the other interconnect elements (10) are positioned at the opening (shown but not numbered).

Regarding claim 20, Hembree discloses the support surface (46) further comprises an opening (shown but not numbered); and the apertures (54 and 78) comprise at least three apertures around the opening.

Regarding claim 21, Hembree discloses the cross-sectional dimension of the individual apertures (54 and 78) is from approximately 70 percent to approximately 80 percent of the cross-sectional dimension of the corresponding interconnect elements (10).

Regarding claims 22 and 31, Hembree discloses a body having the recess and a shelf; and a ball support member (contact members 52) carried by the shelf and having the support surface (46).

Regarding claim 23, Hembree discloses the individual apertures (54 and 78) comprise a beveled potion.

Regarding claims 25 and 28, Hembree discloses the cross-sectional dimension of the individual apertures (54 and 78) is a first, smallest diameter in the apertures; and the individual apertures comprise a first portion having the first, smallest diameter and a second portion having a second diameter greater than the first diameter.

Regarding claim 27, Hembree discloses the individual apertures (54 and 78) have a cross-sectional dimension less than a cross-sectional dimension of the corresponding interconnect element (10).

Regarding claim 32, Hembree discloses [see Figs. 4A-4C] a test socket (test carrier 42) for receiving a microfeature device (semiconductor 44 and contact balls 10) having a substrate (44) and a plurality of solder balls (10) on the substrate (44), the test socket (42) comprising: a body (alignment member 48) including a recess (alignment opening 94), a lead-in surface (48) partially defining the recess (94), and a shelf (part of base 46) in the recess (94); and a ball support member (base 46) carried by the shelf, the ball support member (46) including a plurality of open apertures (54 and 78) positioned to receive corresponding solder balls (10) of the microfeature device (44 and 10), wherein individual open apertures (54 and 78) extend through the ball support member (46) and are sized to receive a portion of a corresponding solder ball (10) so that the substrate (44) is spaced apart from the support surface (46) when the microfeature device (44 and 10) is received in the test socket (42).

Regarding claim 33, Hembree discloses the individual apertures (54 and 78) have a diameter less than a diameter of the corresponding solder ball (10).

Regarding claim 34, Hembree discloses the individual apertures (54 and 78) comprise a first portion having a first diameter and a second portion having a second diameter greater than the first diameter.

Regarding claim 35, Hembree discloses the apertures (54 and 78) in the ball support (46) are arranged in rows and columns corresponding to an array of interconnect elements (10) on the microfeature device (44 and 10).

Regarding claim 36, Hembree discloses the ball support (46) further comprises an opening (shown but not numbered); and the apertures (54 and 78) in the support surface (46) are arranged around the perimeter of the opening so that when the microfeature device (44 and 10) is received in the recess (94), the apertures (54 and 78) receive the corresponding interconnect elements (10) and the other interconnect elements (10) are positioned at the opening (shown but not numbered).

Regarding claim 37, Hembree discloses a test socket (test carrier 42) for receiving a microfeature device (44 and 10) having a substrate (44) and an array of conductive balls (10) on the substrate (44), the test socket (42) comprising a support surface (46) and a plurality of open apertures (54 and 78) arranged in an array corresponding to the array of conductive balls (10) of the microfeature device (44 and 10), wherein the individual open apertures (54 and 78) extend through the test socket (42) and have a first diameter at the support surface (46) and a second diameter spaced apart from the support surface (46), wherein the second diameter is less than the first diameter such that the substrate (44) is spaced apart from the support surface (46) when the microfeature device (44 and 10) is received in the test socket (42), and wherein at least one of the first and second diameters is less than a diameter of the conductive balls (10).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 for details.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (571) 272-1960. The examiner can normally be reached on M-F (9:00-4:00 EST) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on (571) 272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jermele M. Hollington
Primary Examiner
Art Unit 2829

JMH
November 1, 2006